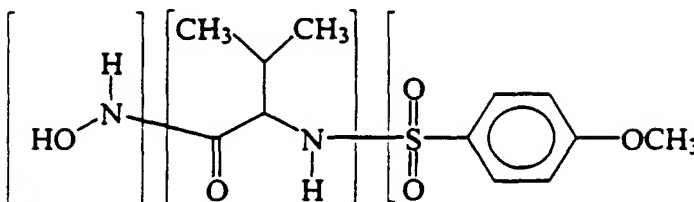
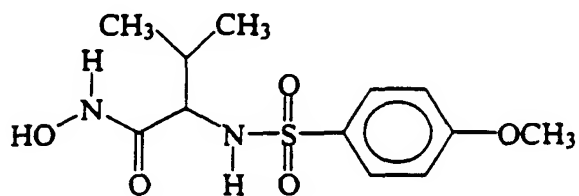


# Compound CI



|                   | Fi                | Fii                              | Fiii   |
|-------------------|-------------------|----------------------------------|--|
| Molecular formula | H <sub>2</sub> NO | C <sub>5</sub> H <sub>9</sub> NO | C <sub>7</sub> H <sub>7</sub> O <sub>3</sub> S |

Figure 1

09753869.041601

|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
| DRAFTSMAN |           |          |

Pocket No.: IBIS-0339  
 Title: GENERATION OF VIRTUAL COMBINATORIAL  
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### Addition of fragments to yield compounds

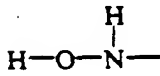
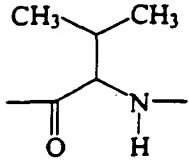
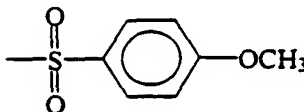
| Fragment Identifier | Table   |               |  |       |
|---------------------|---|---------------|--|-------|
|                     | Structure   | Name          | Molecular formula                              | Other |
| F <sub>i</sub>      |  | Hydroxylamine | H <sub>2</sub> NO                              | ...   |
| F <sub>ii</sub>     |  | Amino acid    | C <sub>5</sub> H <sub>9</sub> NO               | ...   |
| F <sub>iii</sub>    |  | Sulfonyl      | C <sub>7</sub> H <sub>7</sub> O <sub>3</sub> S | ...   |

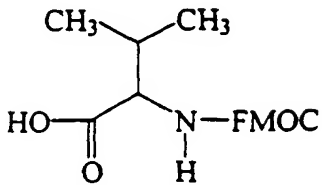
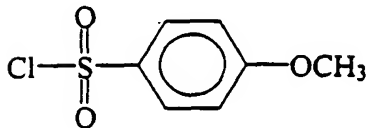
Figure 2

09753869-041601

|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
| DRAFTSMAN |           |          |

Docket No.: IBIS-0339  
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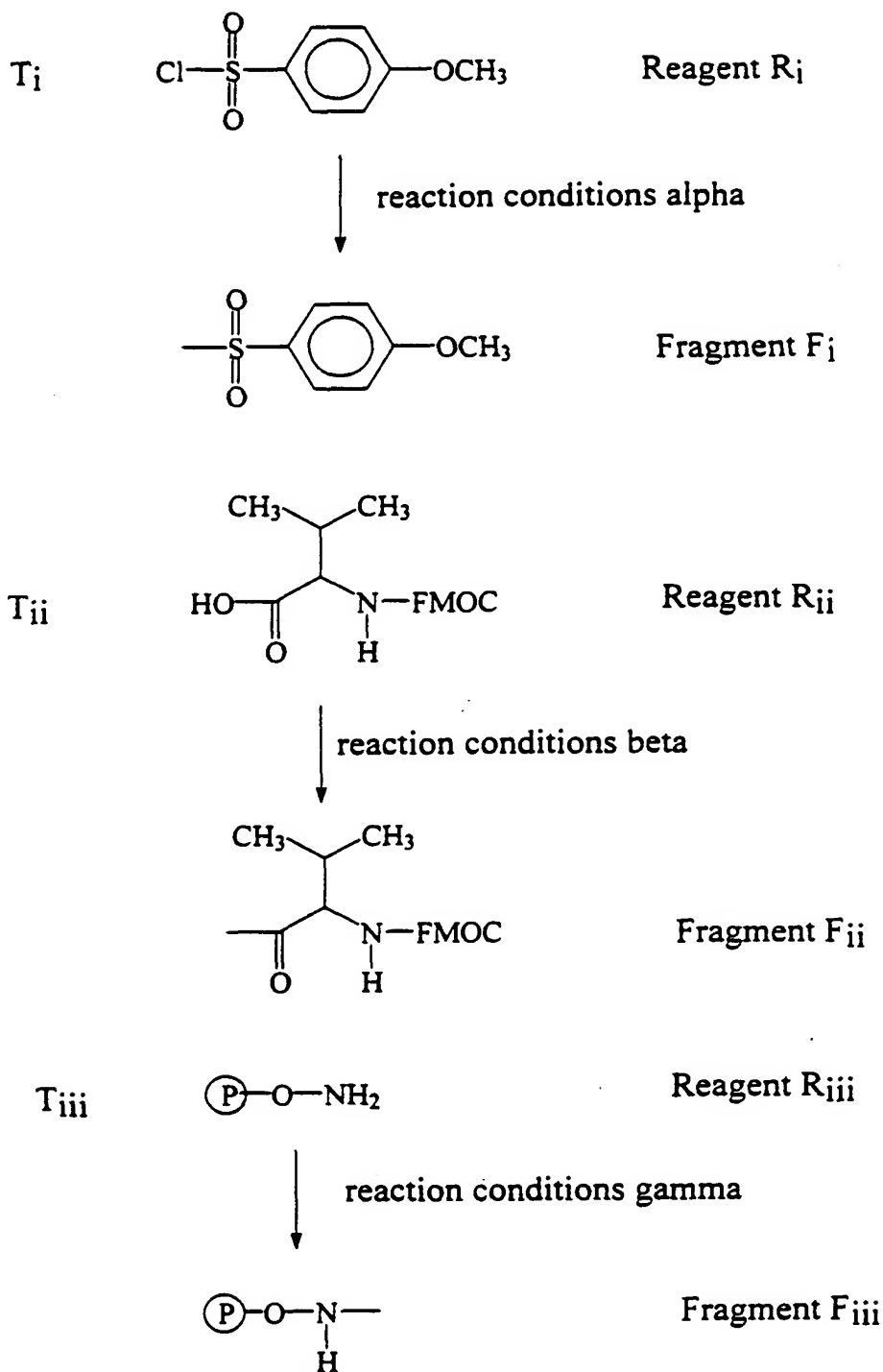
| Reagents  | Identifier       | Name                    | Properties |
|---|------------------|-------------------------|------------|
| $\text{H}-\text{O}-\text{NH}_2$<br>or<br>$\text{(P)}-\text{O}-\text{NH}_2$        | R <sub>i</sub>   | Hydroxylamine           | ...        |
|  | R <sub>ii</sub>  | Fmoc blocked amino acid | ...        |
|  | R <sub>iii</sub> | Sulfonylchloride        | ...        |

$\text{(P)}$  = Solid support

Figure 3

09753069.041504  
 T09T70" 6905260

# Transformation



Ⓟ = Solid support

Figure 4

09753869.041601

|           |                |
|-----------|----------------|
| APPROVED  | O.C. NO.       |
| BY        | CLASS/SUBCLASS |
| DRAFTSMAN |                |

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## Common Fragment / Different Reagents and Transformations

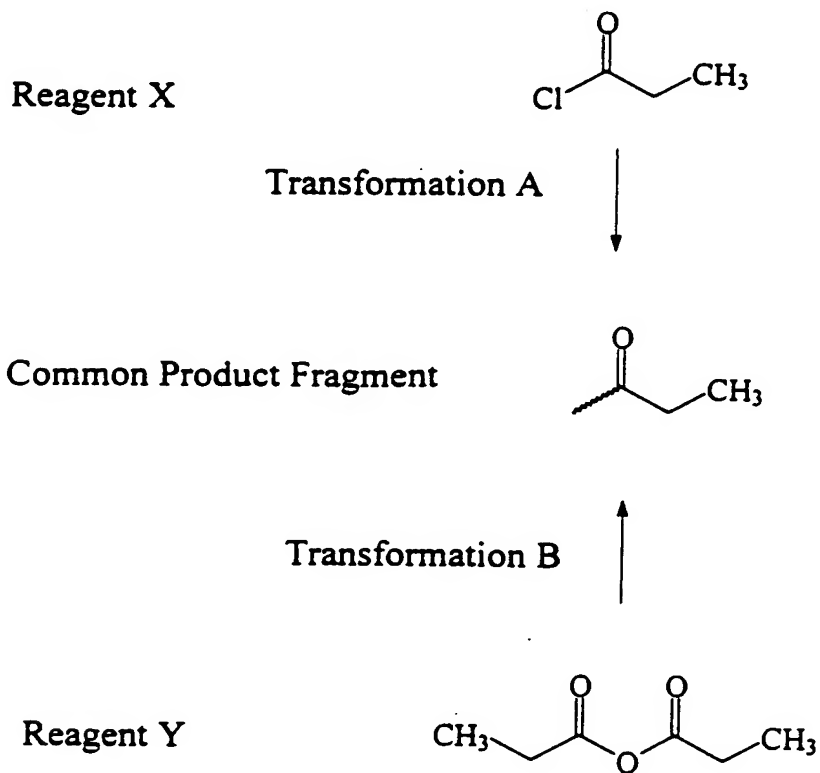


Figure 5

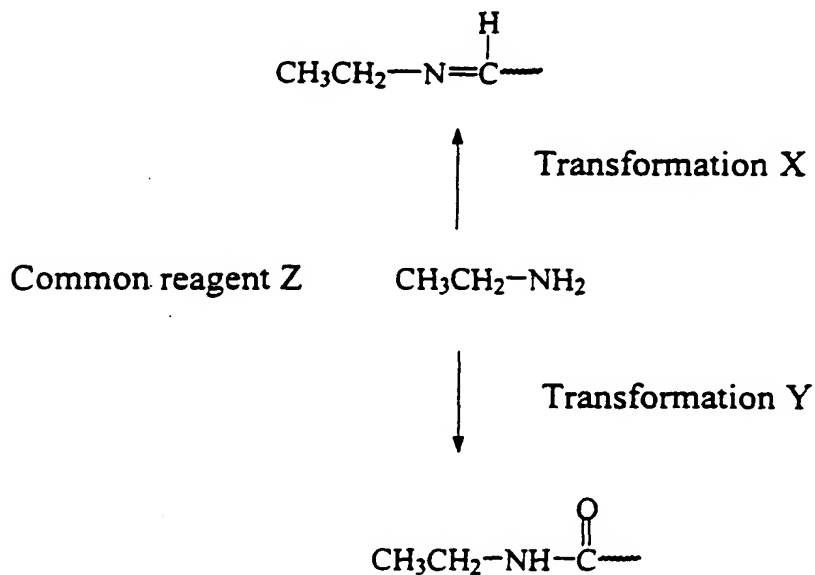
09753869-041601

|           |               |
|-----------|---------------|
| APPROVED  | O.G. FIG.     |
| BY        | CLASS/RECLASS |
| DRAFTSMAN |               |

Patent No.: IBIS-0339  
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 Inventors: Richard Griffey and Eric Swayze  
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## Common Fragment / Different Reagents and Transformations



09753869-041601

Figure 6a

|           |                |
|-----------|----------------|
| APPROVED  | O.G. FIG.      |
| BY        | CLASS SUBCLASS |
| DRAFTSMAN |                |

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 Inventors: Richard Griffey and Eric Swayze  
 Atty: Paul K. Legaard - Telephone: 215 568 3100

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## Common Reagent

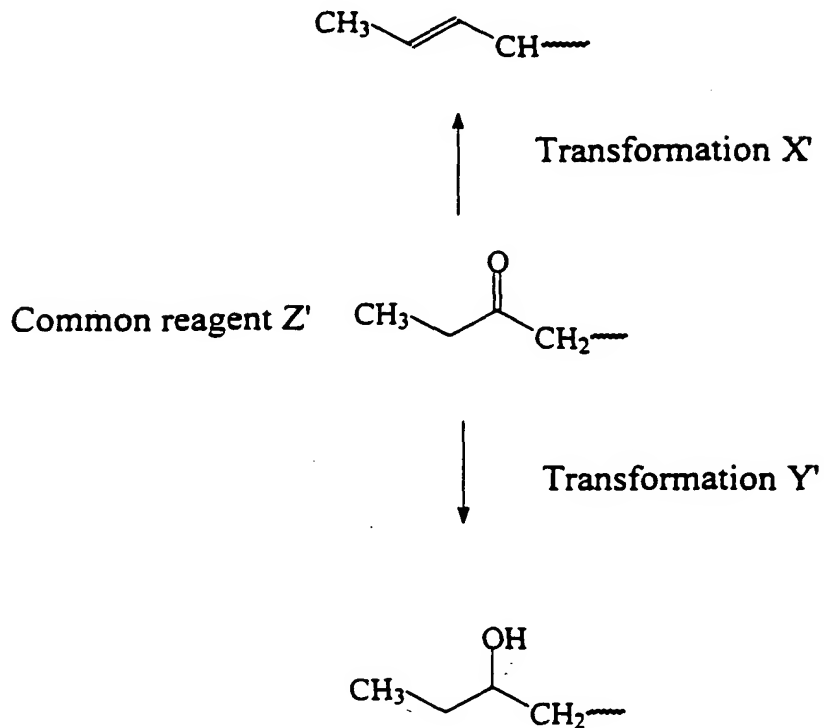


Figure 6b

09753869, 04-16-01

|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
| DRAFTSMAN |           |          |

# Symbolic addition of fragments to yield compound

| <u>Symbolic Structure</u> | <u>Symbolic Identifier</u> | <u>Molecular formula</u> |
|---------------------------|----------------------------|--------------------------|
|---------------------------|----------------------------|--------------------------|

## Fragment



$F_i'$

$C_uH_vN_w \dots$



$F_{ii}'$

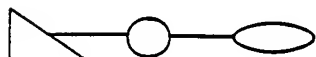
$C_uH_vN_w \dots$



$F_{iii}'$

$C_uH_vN_w \dots$

## Compound



$CI'$

$C_uH_vN_w \dots$

Molecular formula  $F_i'$

+

Molecular formula  $F_{ii}'$

+

Molecular formula  $F_{iii}'$

= Molecular formula  $CI'$

Figure 7

09753869-041604



|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
| DRAFTSMAN |           |          |

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 Title: GENERATION OF VIRTUAL COMBINATORIAL  
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 Inventors: Richard Griffey and Eric Swayze  
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## Symbolic Reagent Table




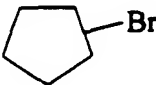
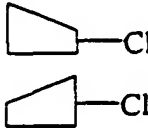



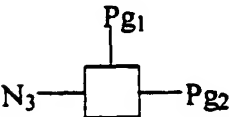
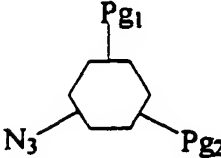
| <u>Identifier</u> | <u>Name</u> | <u>Structure</u>  | <u>Molecular formula</u> |
|-------------------|-------------|---|--------------------------|
| R1                | xxx         |    | xxx                      |
| R2                | ...         |    | ...                      |
| R3                | ...         |    | ...                      |
| R4                | ...         |    | ...                      |
| R5                | ...         |   | ...                      |
| R6                | ...         |  | ...                      |
| R7                | ...         |  | ...                      |
| R8                | ...         |  | ...                      |
| R9                | ...         |  | ...                      |
| R10               | ...         |  | ...                      |

Figure 8

09753869-04-1601

|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
| DRAFTSMAN |           |          |

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 Inventors: Richard Griffey and Eric Swayze  
 Atty: Paul K. Legaard - Telephone: 215 568 3100

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## Symbolic Fragment Table




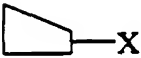
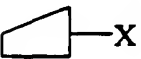


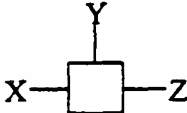
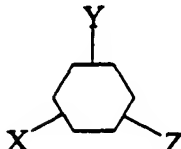
| <u>Identifier</u> | <u>Symbolic Structure</u>  | <u>Molecular formula</u> | <u>Molecular Weight</u> |
|-------------------|--|--------------------------|-------------------------|
| F1                |   | xxx                      | xxx                     |
| F2                |   | ...                      | ...                     |
| F3                |   | ...                      | ...                     |
| F4                | <br> | ...                      | ...                     |
| F5                |   | ...                      | ...                     |
| F6                |   | ...                      | ...                     |
| F7                |   | ...                      | ...                     |
| F8                |   | ...                      | ...                     |

Figure 9

09753869-041604  
T09T40-69855260

|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
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 Inventors: Richard Griffey and Eric Swayze  
 Atty: Paul K. Legaard - Telephone: 215 568 3100

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## Symbolic Transformation Table





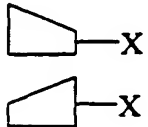
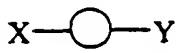
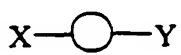

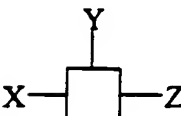
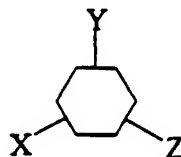
| Identifier |    | Symbolic Reactions  | Reagent               |
|------------|----|---|-----------------------|
| T1         | F1 |  ← R1    | conditions $\alpha$   |
| T2         | F2 |  ← R2    | conditions $\beta$    |
| T3         | F3 |  ← R3    | conditions $\alpha$   |
| T4         | F3 |  ← R4    | conditions $\alpha$   |
| T5         | F4 |  ← R5   | conditions $\alpha$   |
| T6         | F5 |  ← R6  | conditions $\epsilon$ |
| T7         | F5 |  ← R7  | conditions $\alpha$   |
| T8         | F6 |  ← R8  | conditions $\alpha$   |
| T9         | F7 |  ← R9  | conditions $\gamma$   |
| T10        | F8 |  ← R10 | conditions $\gamma$   |

Figure 10

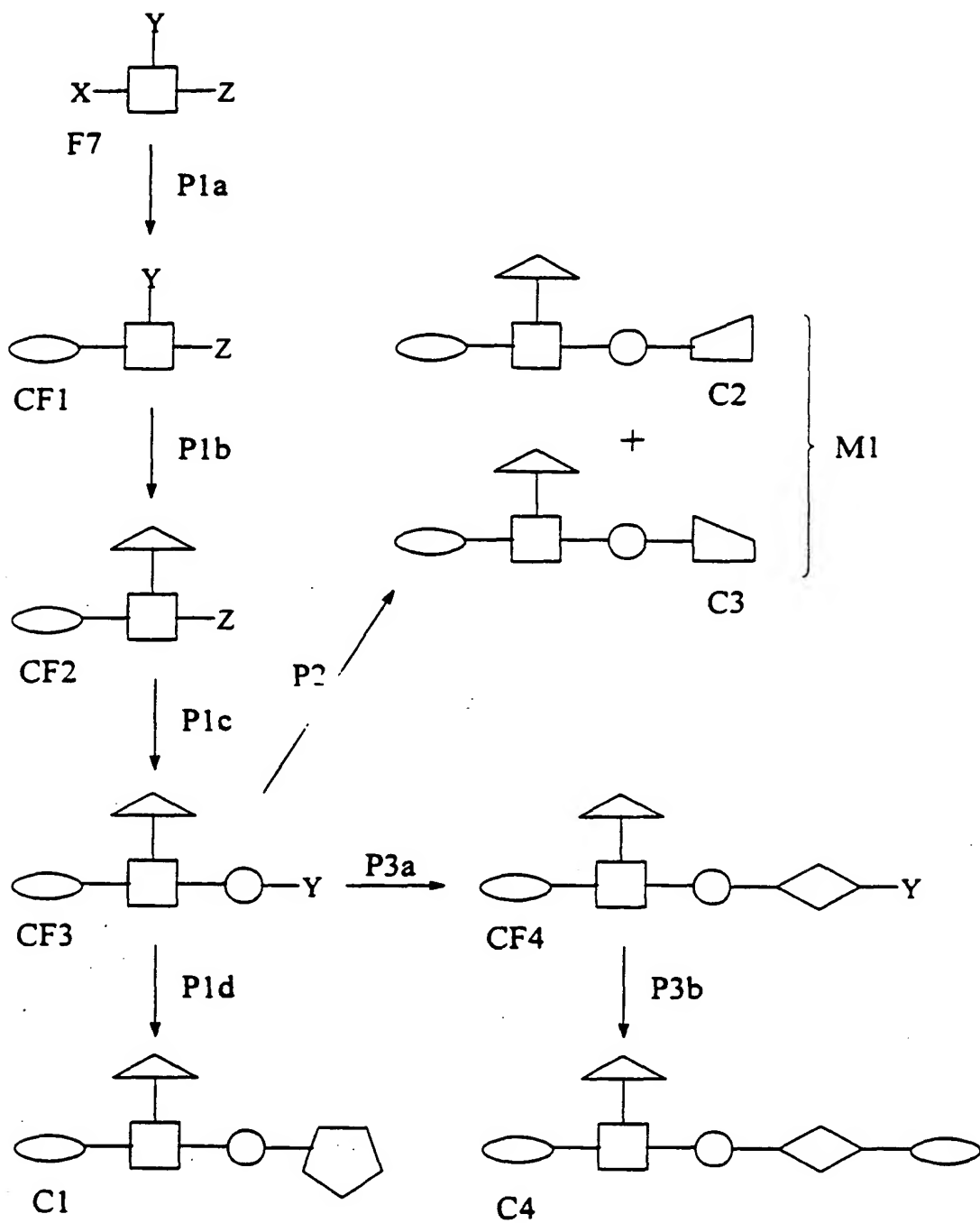
09753869-041601  
 T09140-6985260

|           |                |
|-----------|----------------|
| APPROVED  | O.G. FIG.      |
| BY        | CLASS SUBCLASS |
| DRAFTSMAN |                |

Docket No.: IBIS-0339  
 GENERATION OF VIRTUAL COMBINATORIAL  
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 Inventors: Richard Griffey and Eric Swayze  
 Atty: Paul K. Legaard - Telephone: 215 568 3100

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## Single Compounds and Mixtures



P = synthetic path    CF = complex fragment  
 F = fragment        M = mixture  
 C = compound

Figure 11

09753869.041603

|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
| DRAFTSMAN |           |          |

Docket No.: IBIS-0339  
Title: GENERATION OF VIRTUAL COMBINATO  
LIBRARIES OF COMPOUNDS  
Inventors: Richard Griffey and Eric Swayze  
Atty: Paul K. Legaard - Telephone: 215 568 3100

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## Mixture 2

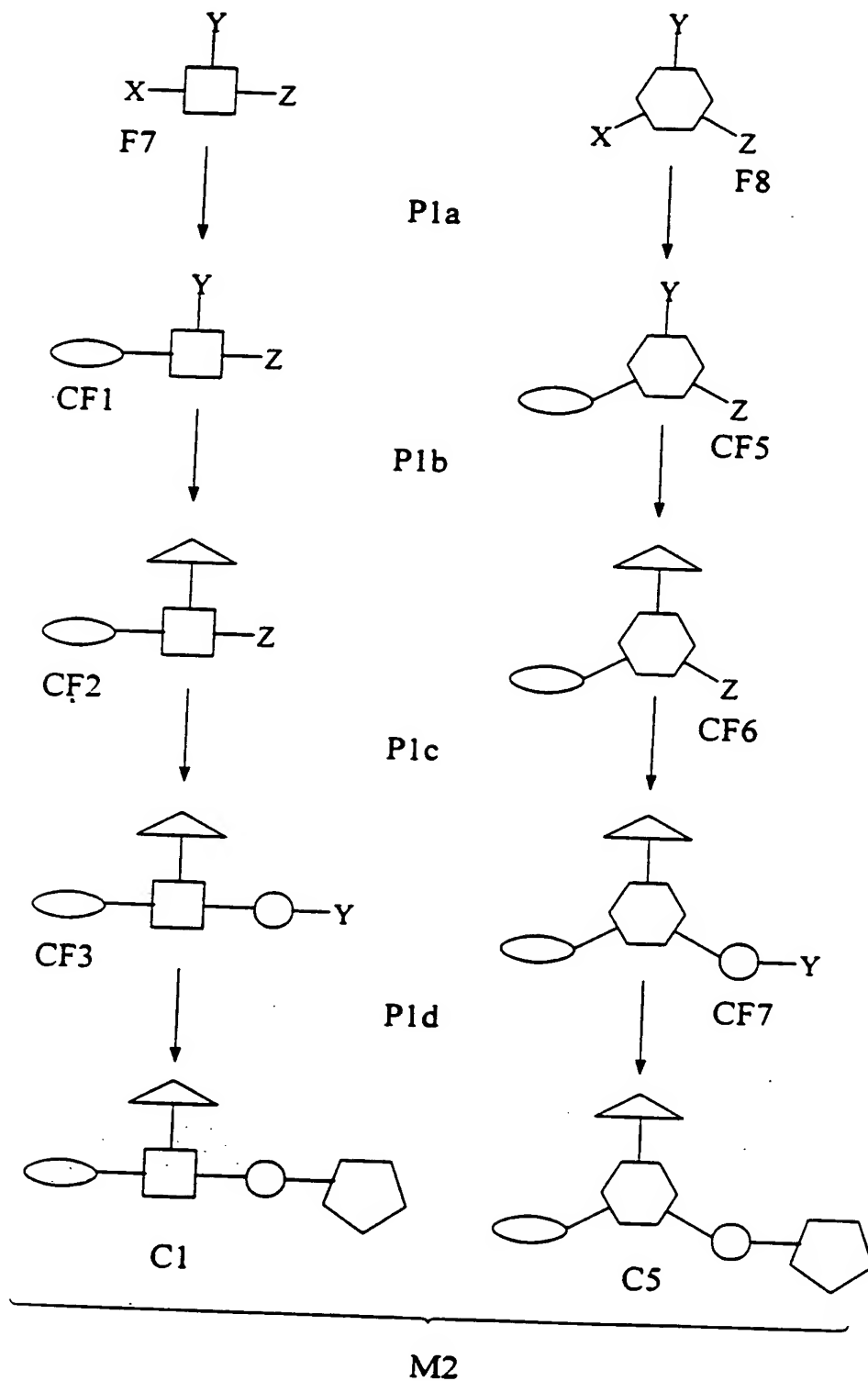


Figure 12

09753869 041601

### Mixture 3

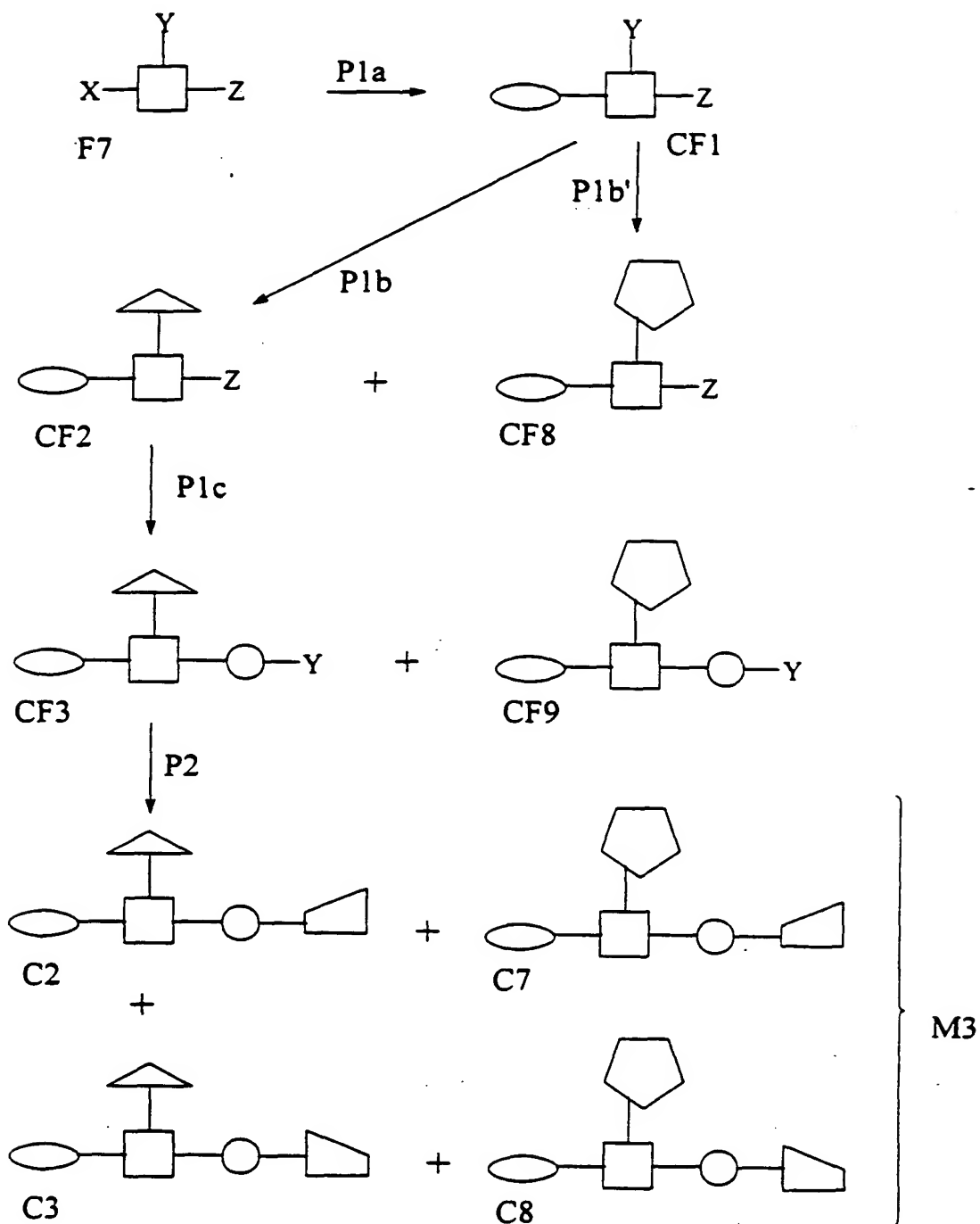


Figure 13

09753869.041601

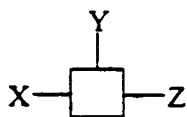
|           |                |
|-----------|----------------|
| APPROVED  | O.G. FIG.      |
| BY        | CLASS SUBCLASS |
| DRAFTSMAN |                |

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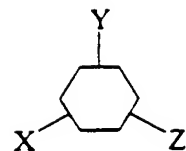
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# Mixture 4

## 2 Starting Fragments

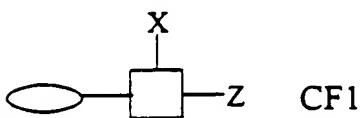


F7

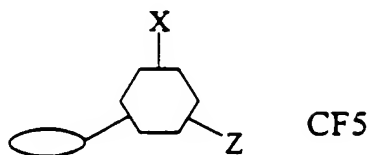


F8

## 2 Complex Fragments

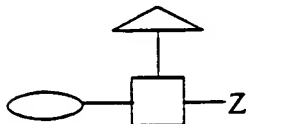


CF1

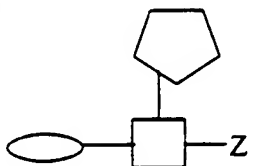


CF5

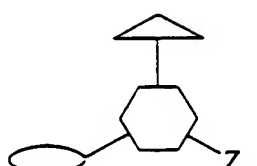
## 4 Complex Fragments



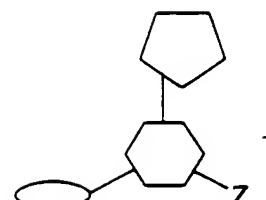
CF2



CF8

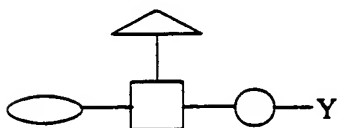


CF 6

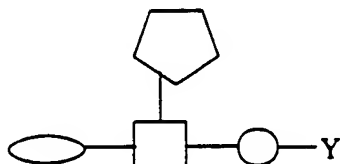


CF11

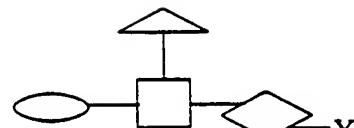
## 8 Complex Fragments



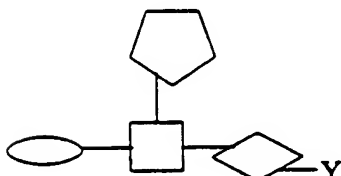
CF3



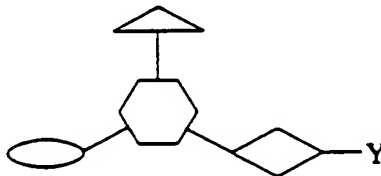
CF9



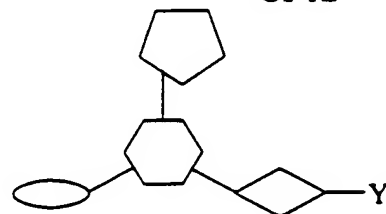
CF12



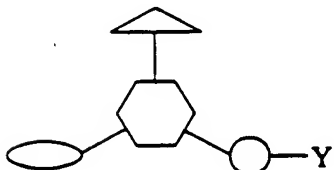
CF13



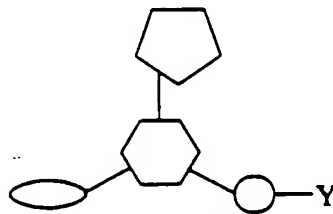
CF15



CF16



CF 7



CF14

Figure 14a

09753869.044601

# Mixture 4 (continued)

## 16 compounds

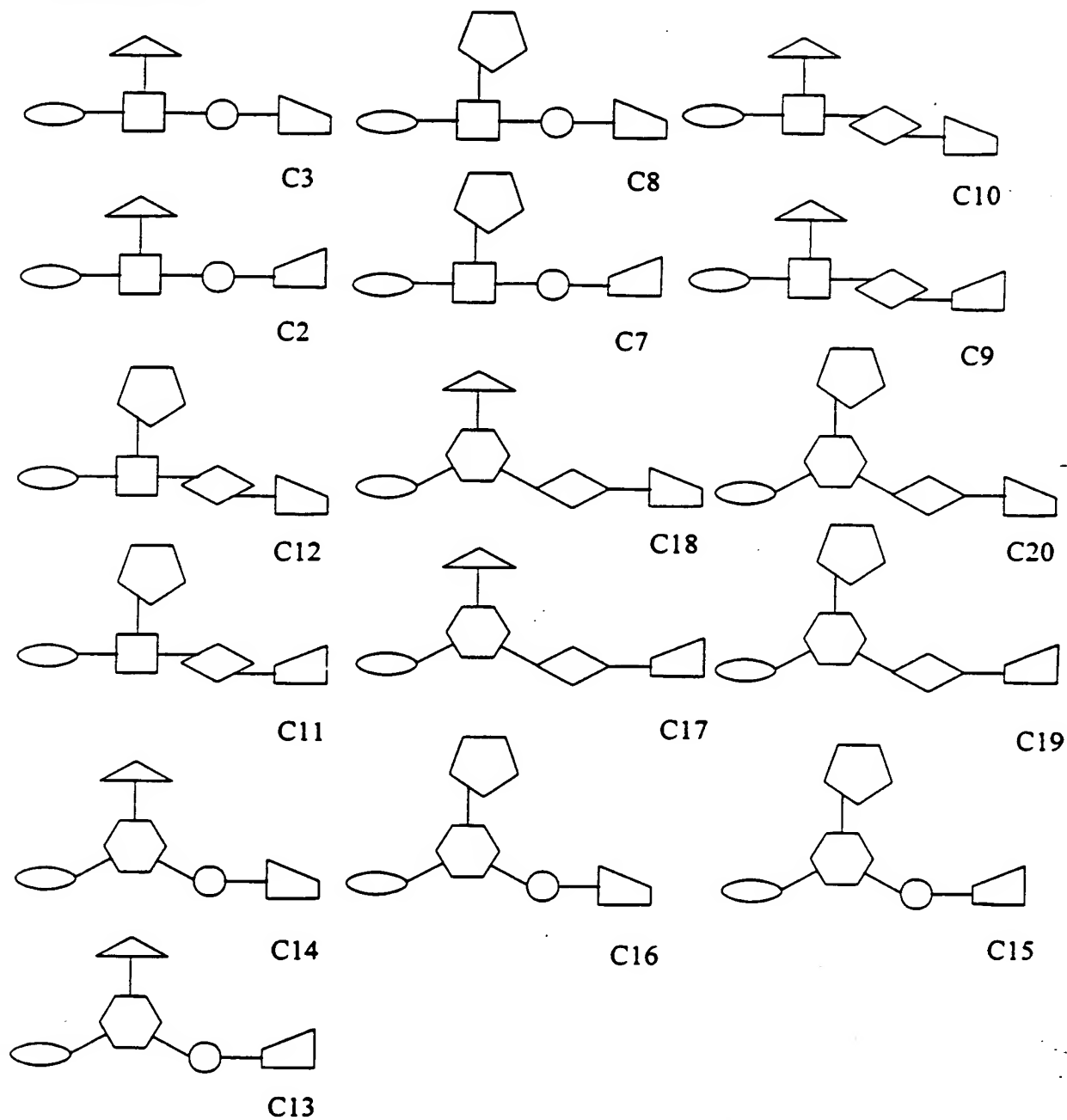


Figure 14b



|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
| DRAFTSMAN |           |          |

Pat No.: IBIS-0339  
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 Inventors: Richard Griffey and Eric Swayze  
 Atty: Paul K. Legaard - Telephone: 215 568 3100

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## Tracking Table for Compound C1

### (a) By Fragments:

| n  | n+1            | n+2 |
|----|----------------|-----|
| F7 | F2<br>F1<br>F5 | F3  |

### (b) By Transformations:

#### Synthesis Path 1

| n  | n+1            | n+2 |
|----|----------------|-----|
| T9 | T2<br>T1<br>T6 | T3  |

#### Synthesis Path 2

| n  | n+1            | n+2 |
|----|----------------|-----|
| T9 | T2<br>T1<br>T7 | T3  |

#### Synthesis Path 3

| n  | n+1            | n+2 |
|----|----------------|-----|
| T9 | T2<br>T1<br>T6 | T4  |

#### Synthesis Path 4

| n  | n+1            | n+2 |
|----|----------------|-----|
| T9 | T2<br>T1<br>T7 | T4  |

Figure 15

09753869 "04-1601"

|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
| DRAFTSMAN |           |          |

Docket No.: IBIS-0339  
 Title: GENERATION OF VIRTUAL COMBINATORIAL  
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 Inventors: Richard Griffey and Eric Swayze  
 Atty: Paul K. Legaard - Telephone: 215 568 3100

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## Tracking Table

### Tracking M1

| Step 1 |  |  |
|--------|--|--|
| T9     |  |  |

| Step 2 |    |  |
|--------|----|--|
| T9     | T2 |  |

| Step 3 |          |  |
|--------|----------|--|
| T9     | T2<br>T1 |  |

| Step 4 |                |  |
|--------|----------------|--|
| T9     | T2<br>T1<br>T7 |  |

| Step 5 |                |                 |
|--------|----------------|-----------------|
| T9     | T2<br>T1<br>T7 | T5 <sup>1</sup> |

C2

| Step 5 |                |                 |
|--------|----------------|-----------------|
| T9     | T2<br>T1<br>T7 | T5 <sup>2</sup> |

C3

Figure 16

09753869-041501

|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
| DRAFTSMAN |           |          |

Patent No.: IBIS-0339  
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 Inventors: Richard Griffey and Eric Swayze  
 Atty: Paul K. Legaard - Telephone: 215 568 3100

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## Tracking Table

### Tracking M2

| Step 1 |     |     |
|--------|-----|-----|
| n      | n+1 | n+2 |
| T9     |     |     |

| Step 1 |     |     |
|--------|-----|-----|
| n      | n+1 | n+2 |
| T10    |     |     |

| Step 2 |     |     |
|--------|-----|-----|
| n      | n+1 | n+2 |
| T9     | T2  |     |

| Step 2 |     |     |
|--------|-----|-----|
| n      | n+1 | n+2 |
| T10    | T2  |     |

| Step 3 |          |     |
|--------|----------|-----|
| n      | n+1      | n+2 |
| T9     | T2<br>T1 |     |

| Step 3 |          |     |
|--------|----------|-----|
| n      | n+1      | n+2 |
| T10    | T2<br>T1 |     |

| Step 4 |                |     |
|--------|----------------|-----|
| n      | n+1            | n+2 |
| T9     | T2<br>T1<br>T7 |     |

| Step 4 |                |     |
|--------|----------------|-----|
| n      | n+1            | n+2 |
| T10    | T2<br>T1<br>T7 |     |

| Step 5 |                |     |
|--------|----------------|-----|
| n      | n+1            | n+2 |
| T9     | T2<br>T1<br>T7 | T4  |

| Step 5 |                |     |
|--------|----------------|-----|
| n      | n+1            | n+2 |
| T10    | T2<br>T1<br>T7 | T4  |

C1

C5

Figure 17

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|           |           |          |
|-----------|-----------|----------|
| APPROVED  | O.G. FIG. |          |
| BY        | CLASS     | SUBCLASS |
| DRAFTSMAN |           |          |

Docket No.: IBIS-0339  
 Title: GENERATION OF VIRTUAL COMBINATORIAL  
 LIBRARIES OF COMPOUNDS  
 Inventors: Richard Griffey and Eric Swayze  
 Atty: Paul K. Legaard - Telephone: 215 568 3100

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## Tracking Table

### Tracking M3

#### Step 1

|    |  |  |
|----|--|--|
| T9 |  |  |
|----|--|--|

#### Step 2

|    |    |  |
|----|----|--|
| T9 | T2 |  |
|----|----|--|

#### Step 3

|    |          |  |
|----|----------|--|
| T9 | T2<br>T1 |  |
|----|----------|--|

#### Step 3

|    |          |  |
|----|----------|--|
| T9 | T2<br>T3 |  |
|----|----------|--|

#### Step 4

|    |                |  |
|----|----------------|--|
| T9 | T2<br>T1<br>T7 |  |
|----|----------------|--|

#### Step 4

|    |                |  |
|----|----------------|--|
| T9 | T2<br>T3<br>T7 |  |
|----|----------------|--|

#### Step 5

|    |                |  |
|----|----------------|--|
| T9 | T2<br>T1<br>T7 |  |
|----|----------------|--|

C2

#### Step 5

|    |                |  |
|----|----------------|--|
| T9 | T2<br>T1<br>T7 |  |
|----|----------------|--|

C3

#### Step 5

|    |                |  |
|----|----------------|--|
| T9 | T2<br>T3<br>T7 |  |
|----|----------------|--|

C7

#### Step 5

|    |                |  |
|----|----------------|--|
| T9 | T2<br>T3<br>T7 |  |
|----|----------------|--|

C8

Figure 18

FIG. 18